

Flooding in Pakistan: Overview and Issues for Congress

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Summary

Pakistan experienced a catastrophic natural disaster that has precipitated a humanitarian crisis of major proportions. Widespread flooding affected about 20 million Pakistanis and inundated an area the size of Florida within the country. Congressional interest in the flooding stems from the significant humanitarian and economic implications for the country, and the security implications for U.S. interests in the region. The World Bank and Asian Development Bank have estimated that the flooding has caused \$9.7 billion in damages. While this figure might still be preliminary, it is almost certain that the negative effects of this crisis will be felt for many years to come.

The floods stemmed from abnormally heavy rains during the monsoon season in July and August, 2010. This led to flooding in the Indus River Basin which traverses Pakistan from north to south. Excess water led the Indus River and its tributaries to breach their levees and inundate adjacent and downstream floodplains. Approximately 2000 people were believed to have been killed by the flooding. One fifth of the country was submerged, and an estimated eight million Pakistanis were displaced from their homes. The number of people affected were significantly greater than several major disasters around the world since 2000. Little clean drinking water was available for many of the people who were affected and remains a problem today. Many of those affected, particularly children, face potential disease outbreaks, particularly diarrhea and cholera. The catastrophic loss of livestock and crop lands and extensive damage to the country's infrastructure are projected to have long-term negative effects on Pakistan's food security and economic performance.

Pakistan is at the center of several crucial U.S. interests, including fighting terrorism and religious militancy, seeking stability in neighboring Afghanistan, and promoting nuclear non-proliferation, among others. The aftermath of the floods can affect broad political and strategic dynamics in Pakistan and the region in a number of ways. The crisis may undermine the already waning legitimacy of the civilian government by demonstrating its ineffectiveness to large numbers of Pakistanis in need of public services, while improving the status of Pakistan's powerful military by the more visible role it played in providing disaster relief. It may also provide militants an opportunity to garner favor with affected communities by giving militants an opportunity to demonstrate that they can provide assistance in areas where the government is absent. The crisis has also diverted attention and resources from other national priorities, at a time when Pakistan remains financially strapped.

U.S. interests are served by a stable Pakistan that can effectively rule all its territory. Any crisis on a scale of the present floods that undermines the Pakistani state's ability to control its territory has the potential to undermine U.S. interests. The inability of Pakistan to fully extend its authority into areas along its northwest frontier with Afghanistan has allowed Islamist militants hostile to the United States to find refuge. The flooding diverted Pakistani resources and focus away from its struggle with Islamist militants. This has the potential to indirectly affect U.S. military involvement in Afghanistan by taking pressure off militants on the Pakistani side of the international frontier. On a positive note, the crisis presents the United States with an opportunity to improve its poor image among Pakistanis through provision of humanitarian assistance. Congress will play an important role in overseeing such assistance in the near term, and broad foreign assistance strategies for rebuilding infrastructure and other development goals in the medium and long run. For more information on environmental issues and Pakistan, see CRS Report R41358, *Security and the Environment in Pakistan*. For broader discussion of U.S.-Pakistan relations, see CRS Report R41307, *Pakistan: Key Current Issues and Developments*.

Contents

Introduction	1
Congressional Interest.....	2
Potential Actions for Congress.....	2
Context of the 2010 Pakistan Flood	2
Government of Pakistan Response.....	4
United States Response	5
U.S. Private Donations	7
International Response	8
Overview of the Humanitarian Response.....	8
Food Security	9
Effects on Health.....	9
Displaced Populations.....	10
Comparing Responses to Haiti and Pakistan: Lessons Learned.....	11
Lessons Learned from Haiti.....	12
Implications of Flooding on Selected Sectors of Pakistan	13
Implications on Energy and Infrastructure.....	13
Implications for Agriculture.....	15
Crops.....	15
Livestock.....	17
Economic Implications of the Floods.....	17
Political-Security Implications of the Flood	19
Pakistan-U.S. Relations, Militant Groups, and Public Sentiment.....	20
Domestic Political Effects.....	22
Counterinsurgency Operations.....	23
Context of Pakistan's Flood Risk	25
Climate Change and Flooding.....	26
Observations.....	26

Figures

Figure 1. 2010 Extent of Flooding in Pakistan.....	4
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Tables

Table 1. Provinces in Pakistan Affected by Flooding.....	3
Table 2. FY2010 Humanitarian Aid for Pakistan Floods	5
Table 3. FY2010-FY2011 U.S. Humanitarian Aid to Pakistan	6

Contacts

Author Information.....	27
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Introduction

Widespread flooding in Pakistan affected millions of people and caused a significant humanitarian disaster with widespread economic and security consequences for the country. A stable, democratic, prosperous Pakistan actively combating religious militancy is considered vital to U.S. interests. The humanitarian effects of the flooding along with its security consequences generated considerable concern in the United States and many countries around the world. The flooding in Pakistan, which started in late July 2010, reportedly affected over 20 million people. Over 1.9 million households were destroyed or damaged.¹ Approximately 2,000 people died and over 3,000 were injured.²

In terms of affected persons, the humanitarian impact of the 2010 floods in Pakistan is estimated to be larger than other recent natural disasters experienced globally. The estimated 20 million people affected by flooding in Pakistan is more than the estimated number of people affected by the 2010 earthquake in Haiti, the 2005 tsunami in the Indian Ocean littoral region, and the 2005 South Asia earthquake combined.³ The death toll increased after floodwaters receded in some areas, although specific number of deaths directly attributable to flooding is difficult to ascertain. Lost shelter and food staples, limited access to clean water, and unsanitary conditions from standing water and submerged lands are immediate humanitarian issues. Cases of malnutrition, gastroenteritis, diarrhea, skin infections, cholera, typhoid, malaria, and hepatitis have been reported. The Pakistan government established a National Oversight Disaster Management Council to improve the transparency in the distribution of flood relief. However, humanitarian relief efforts were tempered by initially low levels of donations, difficulties in accessing victims, the large geographical extent of the disaster, and security concerns in some regions.⁴

Some medium and long-term consequences of flooding have been projected. Lost livelihoods for farmers (e.g., not being able to plant next season's crop) and a diminished food supply is a key concern. The flooding destroyed crops, food stockpiles, livestock, seeds, structures, and equipment. Food prices dramatically increased since the flooding, putting an economic strain on the entire population. Rebuilding damaged and destroyed housing is also expected to affect the return of displaced populations. As tensions mount and the struggle to stabilize persists, public confidence in government efforts to provide assistance will be tested. Long-term consequences such as damaged infrastructure (e.g., bridges, roads, electrical plants, and schools) are also expected to hamper recovery efforts and have a lasting effect on the country.

Before the flooding, top-tier U.S. concerns regarding Pakistan included regional and global terrorism; stability in neighboring Afghanistan; domestic political stability and democratization; nuclear weapons proliferation and security; human rights protection; and economic development. The 2010 floods have exacerbated these concerns. The effects of flooding on the stability of the Pakistani government and its ability to suppress and contain militants within their borders is an issue of concern for the United States and others.⁵

¹ United Nations Office for the Coordination of Humanitarian Affairs, *Pakistan—Monsoon Floods*, Situation Report #23, September 9, 2010. Hereafter referred to as *OCHA Situation Sept. 9 Report*.

² European Union, *Factsheets on Pakistan*, European Union, Memo, Brussels, October 1, 2010.

³ The United Nations Office for the Coordination of Humanitarian Affairs, *Pakistan Floods Affect Millions from North to South*, August 9, 2010.

⁴ "In Pakistan, Taliban Hint at Attacks on Relief Workers," *The New York Times*, August 26, 2010.

⁵ For additional information on broader dynamics related to security and the environment in Pakistan see CRS Report R41358, *Security and the Environment in Pakistan*.

Congressional Interest

Congressional interest regarding the 2010 flooding in Pakistan stems from multiple factors, including the U.S. response to the humanitarian needs of flood victims, potential cost of reconstruction after the flood subsides, the composition of aid given by the United States to Pakistan to garner its support for U.S. operations in Afghanistan, the disabling of Taliban inside Pakistan's borders, and the security concerns arising from a weakened Pakistan with a potentially disenfranchised and dissatisfied population.

Public opinion surveys in Pakistan before the floods present two issues of concern for the United States: (1) that the percentage of Pakistanis polled who are worried about extremist groups taking control of Pakistan has declined from 69% in 2009 to 51% in 2010; and (2) that about 68% polled view the United States unfavorably.⁶ These numbers are expected to change after the floods as perception of a weak government grows and pressure to contain militants softens (see later sections of the report for more details). The United States, however, has an opportunity to improve its perception among Pakistanis. While humanitarian benefits are the priority, emergency aid and reconstruction efforts, if successfully implemented, may provide long-term diplomatic benefits for the United States in Pakistan.

Potential Actions for Congress

One potential issue for Congress and the Obama Administration is deciding what additional actions and funds are available, warranted, and effective. Many have suggested potential actions to address flooding in Pakistan. Some of those actions include

- Additional U.S. emergency relief funding, equipment, and supplies
- U.S. efforts to promote contributions and cooperation from other nations for emergency response and reconstruction
- Actions intended to support the Pakistan economy and trade⁷
- Debt relief
- Efforts to promote individual and corporate aid and contributions
- Measures to promote foreign-direct investment and public-private partnerships

Context of the 2010 Pakistan Flood

Heavy rains associated with monsoons began around July 22, 2010, and led to flash floods in the northwest and east of Pakistan. (See **Figure 1.**) Downpours continued for the rest of the month and persisted into August. The runoff caused the Indus River and its tributaries to breach levees and overflow into floodplains housing both rural and urban populations. At times river flows reached 40 times their normal levels. As floodwaters moved downstream, new areas of flooding emerged in southern provinces, such as Sindh. Intentional levee breaks were made in attempts to protect urban centers (e.g., Hyderabad); nonetheless, levee breaches affecting populations clusters (e.g., Thatta city) were still occurring in early September.

⁶ Pew Research Center, *Pakistan: Growing Concerns About Extremism, Continuing Discontent with U.S.* Public Opinion Survey, August 13, 2009. See at <http://pewresearch.org/pubs/1312/pakistani-public-opinion>.

⁷ For example, bills introduced in the 111th Congress would provide duty free treatment for certain goods, particularly textiles and some clothing, from designated reconstruction opportunity zones in Pakistan and Afghanistan. Textiles represent roughly half of Pakistan's exports.

Table 1. Provinces in Pakistan Affected by Flooding
(As of September 6, 2010)

Province	Deaths	Injured	Houses Damaged	Population Affected
Baluchistan	48	102	75,261	672,171
Khyber Pakhtunkhwa	1,156	1,193	200,799	4,365,909
Punjab	110	350	500,000	8,200,000
Sindh	199	909	1,058,862	6,988,491
AJ&K	71	87	7,108	245,000
Gilgit Baltistan	183	60	2,830	81,605
Total	1,767	2,701	1,844,860	20,553,176

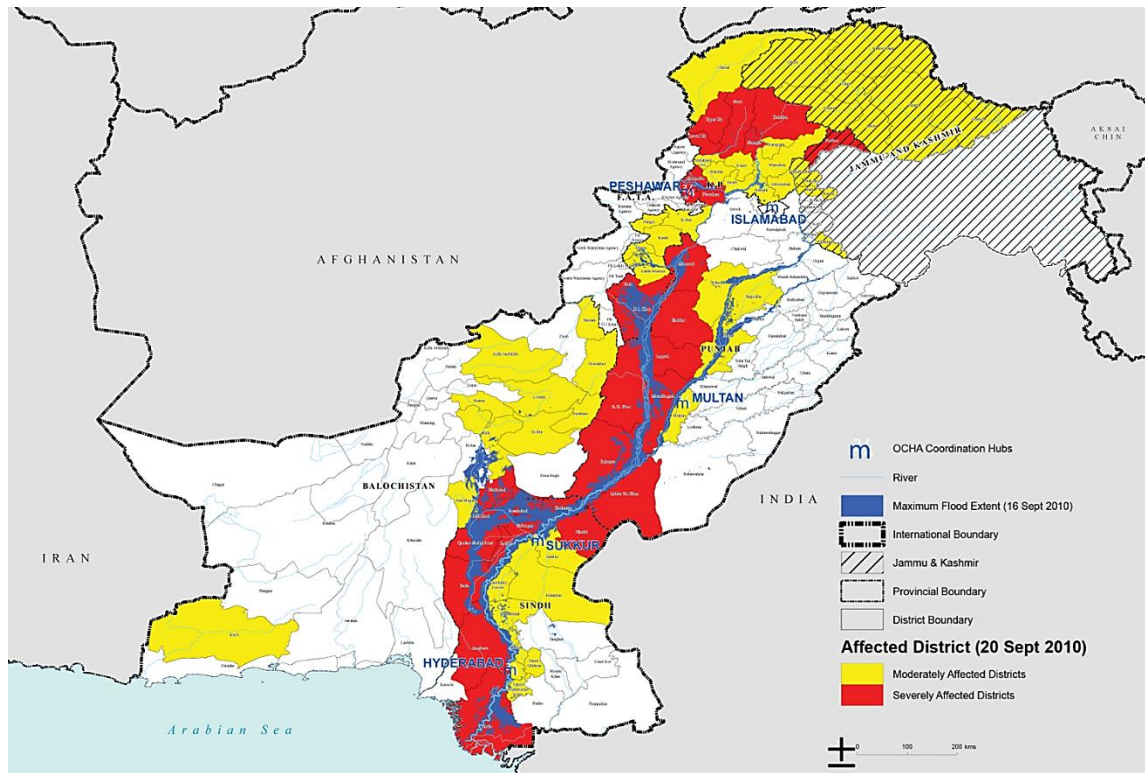
Source: United Nations Office for the Coordination of Humanitarian Affairs, September 14, 2010.

The effects of the flooding covered a large geographical area in Pakistan and affected several provinces. (See **Table 1** for September estimates.) The timing of the flooding effects varied for provinces. For example, in many affected regions in the north (e.g., Punjab and Khyber Pakhtunkhwa provinces), affected populations have largely returned to their damaged communities and started rebuilding. However, in the south, such as in the Sindh province, stagnant floodwaters are preventing recovery, and significant displaced populations exist as of November 2010. It is reported that nearly 7.0 million people are affected by floods in Sindh province, with thousands trapped by flood waters and in need of assistance.⁸ Areas inundated weeks after the onset of flooding suffered significant agricultural and property losses, and concerns about food, shelter, safe water, sanitation, health, and livelihood persist.

⁸ Office of the Coordination of Humanitarian Affairs, *Pakistan Humanitarian Bulletin*, United Nations, Issue 5/4, November 2010.

Figure I. 2010 Extent of Flooding in Pakistan

September 20, 2010



Source: United Nations Office for the Coordination of Humanitarian Affairs.

Notes: The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city, or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

Government of Pakistan Response

The response of the Government of Pakistan to the flooding is being organized at the federal, provincial and district levels. The Economic Affairs Division (EAD) is coordinating donors and the Pakistan National Disaster Management Agency (NDMA) is responsible for overall coordination of disaster response efforts by both the government and the international community. The NDMA works closely with federal ministries, government departments, the armed forces, UN agencies and donors to mobilize, receive and deploy relief goods.⁹ Relief activities are also being coordinated by provincial-level and district-level governments.

The primary Pakistani response to the flooding was initially and has continued to be from the military. The military moved its forces and equipment into the flooded regions to evacuate people and distribute supplies. The civilian government response was reportedly weak, due in part to the damage and destruction of local governmental assets and properties during the flooding. Some

⁹ United Nations, *Pakistan: Floods Relief and Early Recovery Response Plan*, United Nations, November 2010, <http://pakresponse.info/LinkClick.aspx?fileticket=47teGm9PeB8%3d&tabid=93&mid=676>.

also blame coordination issues for a slow state response, such as the absence of civil-military coordination and ineffective civilian control over military-led efforts.¹⁰ There were several reports of widespread criticism by the Pakistani people of the civilian government response to aid flood victims. Some, however, have defended the agency by stating that it was not structured to cope with a disaster of this magnitude.¹¹

To help families rebuild, the Pakistani government is distributing debit cards to affected families. The Pakistan National Database and Registration Authority has distributed debit cards to over 900,000 families as of September 2010.¹² They aim to provide \$1,150 dollars to each head of household in three separate disbursements to help families recover from the floods. Steps are being taken to include female-head of households in the process for those females who lost their husbands.

United States Response

The United States is the largest donor of funding for relief efforts related to the flooding in Pakistan. Some funds are being converted from a portion of the civilian economic development assistance authorized by the Enhanced Partnership with Pakistan Act of 2009 (EPPA 2009, P.L. 111-73), which is appropriated primarily within the FY2010 base and supplemental appropriations (P.L. 111-117 and P.L. 111-212 respectively). To date, the United States is providing a total of \$561.9 million for Pakistan relief and recovery, largely coming from International Disaster Assistance (IDA) and Food For Peace (FFP) funds. (See **Table 2.**) In-kind civilian and military support, such as the pre-fabricated steel bridges, halal meals, and air transport, amounts to another \$89.1 million, according to USAID.¹³

Table 2. FY2010 Humanitarian Aid for Pakistan Floods

(in millions of U.S. dollars)

	FY2010 flood aid	FY2011 flood aid
USAID Office of Foreign Disaster Assistance (OFDA)	\$115.0 (All IDA)	\$76.2 (all IDA)
USDA/Food for Peace (FFP)	\$140.7 (IDA and title II)	\$90.0
USAID Pakistan Assistance	\$10.0 (all ESF funds,\$2 million from OTI after transferred from ESF)	
USAID Pakistan Early Recovery Assistance	\$69.8 (all ESF funds from FY2010 supp)	\$11.0 (all ESF)
State Dept. Bureau of Population, Refugees & Migration (PRM)	\$49.2 (from ERMA & MRA FY2010 base)	
DoD	Not available	

¹⁰ International Crisis Group, *Pakistan: The Worsening IDP Crisis*, International Crisis Group, Asia Briefing no. 11, Brussels, Belgium, September 16, 2010.

¹¹ Talk given by General Jehangir Karamat, *Responding to the Historic Floods in Pakistan: Political and Security Considerations*, Brookings Institution, Washington, DC, September 1, 2010.

¹² USAID Fact Sheet #6 Fiscal Year 2011, November 12, 2010.

¹³ Ibid.

	FY2010 flood aid	FY2011 flood aid
Total	\$384.7	\$177.2

Source: Communications with the Office of the Director of Foreign Assistance, Department of State, and USAID, September 21, 2010.

Note: In addition, the U.S. has provided civilian and military in-kind aid valued at about \$89.1 million.

Prior to the flooding emergency, the United States provided humanitarian aid to Pakistan to address the January 2010 landslides, conflict-affected displaced people (referred to as complex emergency funds), and pre-2010 earthquake expenses. (See **Table 3.**) A potential issue for Congress is whether the purpose of these funds, as well as the authorized economic development funds from the EPPA 2009, should be changed to reflect flood relief efforts and changed circumstances caused by the flood. If the funds are redirected, then there could be concerns as to how the original objectives of the funding will be met.

Table 3. FY2010-FY2011 U.S. Humanitarian Aid to Pakistan

(in thousands of dollars)

Source	FY2009 Base	FY2009 Spring Supp	FY2010 Base	FY2010 Supp	FY2011 Base (CR)	Total
Appropriation Laws	P.L. 111-8	P.L. 111-32	P.L. 111-117	P.L. 111-212	P.L. 111-242	
Int'l Disaster Asst. (IDA)						
Complex Emergency	\$256.0	\$16,569.2	\$225.3	\$1,500.0		\$18,550.5
Earthquake		\$193.5				\$193.5
Landslide	\$50.0					\$50.0
Floods		\$627.4	\$22.6	\$114,355.7	\$76,181.2	\$191,186.9
Total IDA	\$306.0	\$17,390.1	\$247.9	\$115,855.7	\$76,181.2	\$209,980.9
Food For Peace						
Complex Emergency transferred from IDA			\$20,000.0			\$20,000.0
Complex Emergency – Title II	\$55,386.7		\$70,820.8			\$126,207.5
Floods – transferred from IDA			\$120,329.8			\$116,978.7
Floods – Title II			\$20,399.1			\$20,399.1
Floods Total			\$140,728.9		\$90,015.6	\$230,744.5
Total Food For Peace	\$55,386.7		\$231,549.7		\$90,015.6	\$321,565.3
Economic Support Fund (ESF)						

Source	FY2009 Base	FY2009 Spring Supp	FY2010 Base	FY2010 Supp	FY2011 Base (CR)	Total
USAID Pakistan Flood Aid			\$10,000.0 ^a			\$10,000.0
USAID Pakistan Flood early recovery aid				\$69,805.0	\$11,000.0	\$80,805.0
Total ESF – Flood Aid			\$10,000.0 ^b	\$569,805.0	\$11,000.0	\$90,805.0
State Dept – Population, Refugees & Migration						
Complex Emergency (ERMA)	\$13,300.0					\$13,300.0
Complex Emergency (MRA)	\$1,300.0	\$45,000.0 ^c	\$32,000.0			\$78,300.0
Floods (ERMA)			\$33,021.0 ^d			\$33,021.0
Floods (MRA)			\$16,229.0			\$16,229.0
Floods PRM Total			\$49,250.0			\$49,250.0

Source: USAID's Office of Foreign Disaster Assistance, Office of Food For Peace; Department of State's Bureau of Population, Refugees, and Migration, and the Foreign Assistance (F) Bureau.

Notes: IDA = International Disaster Assistance; ERMA=U.S. Emergency Refugee and Migration Assistance; MRA = Migration and Refugee Assistance.

- a. Of this, \$2.0 million was transferred to Office of Transition Initiatives (OTI) for flood assistance.
- b. Of this, \$10.0 million was appropriated within the Bridge Supplemental for FY2009 (P.L. 110-252).
- c. Includes \$21,000 recovery funding from prior ERMA appropriations.
- d. Includes \$819,000 recovery of prior year MRA funding.

The United States Agency for International Development (USAID) is leading all U.S. government humanitarian response efforts to Pakistan. Nearly 30 U.S. military helicopters and four C-130 planes were involved in delivering humanitarian supplies. These included emergency food supplies, plastic sheeting, inflatable rescue boats, concrete-cutting saw kits, shelters, blankets, water storage bladders, and water filtration units among other things. Twenty-six U.S. mobile medical teams were providing health care services, which were needed because about 450 health facilities were destroyed or damaged by the floods, according to OCHA.

U.S. Private Donations

On August 18, 2010, Secretary Clinton announced that the Department of State had created a Pakistan Relief Fund for individuals, corporations, and others to contribute toward relief and recovery efforts in Pakistan. Donations can be made through either the Department of State or USAID websites. As of early September 2010, private sector donations amounted to \$8.39 million, according to USAID. Individuals, corporations, and other organizations can send donations to the people of Pakistan by contributing to this fund at <http://www.state.gov> or <http://www.usaid.gov/pakistanflooding/>. In the United States, individuals also can send funds through mobile phones by texting “FLOOD” to 27722.

International Response

Other countries are providing support for Pakistan flood relief efforts. China claims it was the first to contribute aid to the flood victims and has provided about \$47.0 million.¹⁴ The European Union has provided a total of about \$450.9 million of cash and in-kind aid, including about \$210.4 million from the European Commission Humanitarian Aid Department and sums from more than 20 countries. For example, Germany about \$47.0 million cash and in-kind, Denmark about \$24.4 million, Sweden about \$25.5 million, Norway about \$66.0 million, the United Kingdom about \$209.0 million, and France about \$4.3 million.¹⁵ As of September 8, 2010, Japan has provided a total of \$25.6 million in cash and relief commodities.¹⁶ As of the end of August 2010, Australia has provided \$75 million and Canada has pledged about \$52 million U.S. dollars with an additional \$1.4 million from a Canadian humanitarian coalition.¹⁷ India also has provided \$5 million of aid and is offering more, although receiving aid from India is controversial in Pakistan.

Overview of the Humanitarian Response

The humanitarian implications of the flooding in Pakistan are vast. Humanitarian issues such as health, sufficient food, water, and shelter, and displaced populations exist. Various offices under the United Nations are coordinating with the Government of Pakistan to address humanitarian needs in the country. The United Nations released The Pakistan Initial Floods Emergency Response Plan (PIFERP) on August 11, 2010, seeking approximately \$460 million to respond to the immediate relief needs of flood-affected people. The money is to be used to enable international partners (U.N. and non-governmental organizations) help the Pakistani government address residual relief needs and recovery needs for the next year. This plan covered 12 humanitarian clusters including water and sanitation, health, shelter, agriculture, food, community restoration, protection, education, nutrition, logistics, coordination, and camp management. Funding needs for each cluster are identified in the plan, and planned activities under each cluster are listed. Coordinating entities for each cluster are listed and range from the Food and Agriculture Organization (FAO) for agricultural needs to the United Nations Development Program (UNDP) for community restoration needs. Monitoring and methods for evaluating progress are also included in the plan. In November 2010, a revised plan was issued by the U.N.¹⁸ This plan seeks \$1.9 billion for the above-mentioned sectors to be disbursed from August 2010 to August 2011.¹⁹ The following sections discuss the U.S. and Pakistani government response to the flooding.

¹⁴ Xinhua General News Service, September 9, 2010.

¹⁵ Funding levels are from Factsheets on Pakistan [http://www.reliefweb.int/rw/RWFiles2010.nsf/FilesByRWDocUnidFilename/MUMA-89Z5BL-full_report.pdf/\\$File/full_report.pdf](http://www.reliefweb.int/rw/RWFiles2010.nsf/FilesByRWDocUnidFilename/MUMA-89Z5BL-full_report.pdf/$File/full_report.pdf).

¹⁶ Embassy of Japan in Pakistan, Press Release No: JPNEMPAK 10-038, September 8, 2010, <http://www.pk.emb-japan.go.jp/InfoJapan/Press%202010/September/JPNEMPAK%20010-38.html>.

¹⁷ The Canadian International Development Agency, News Release, *Government of Canada Supports Agricultural Recovery in Pakistan*, October 15, 2010.

¹⁸ United Nations, *Pakistan: Floods Relief and Early Recovery Response Plan*, United Nations, November 2010, <http://pakresponse.info/LinkClick.aspx?fileticket=47teGm9PeB8%3d&tabid=93&mid=676>.

¹⁹ As of November 2010, approximately 39% of the revised appeal was covered.

Food Security

Prior to the recent flooding, poverty and hunger in Pakistan were widespread and especially prevalent in rural areas. Nearly two-thirds of the population and 80% of the country's poor (about 35 million people) live in rural parts of the country. Women in Pakistan, who have the lowest socio-economic status in South Asia, are often among the most vulnerable populations, along with children. The recent global food price and economic crises of 2008-2009 exacerbated poverty and food security issues in Pakistan. FAO estimated that an additional 17 million people became food-insecure as a result of food price inflation in Pakistan over the past few years, and that the poorest households are now spending more than 70% of their incomes on food. Even before the flooding, FAO had estimated that about 60 million people were food-insecure in Pakistan, which accounts for about half of the country's population. While the full extent of damage from the summer 2010 flooding has not yet been fully quantified, the direct and future losses are likely to impact national production of staple crops, such as wheat and rice, and affect the food security of millions of people.

According to the PIFERP, distributing food assistance to flood victims is among the top priorities for the overall immediate flood response. The World Food Programme (WFP) is the lead U.N. agency responsible for coordinating and leading the efforts to address the immediate food needs of flood-affected populations in the hardest-hit areas of the country. The key expected outcomes from the food relief efforts will be to:

- Stabilize and/or improve food consumption over the assistance period for six million flood-affected people per month during the next 12 months,
- Increase the supply of nutritious food to infants and young children, and
- Prevent additional losses of surviving livestock.

WFP is working with over 30 NGOs to provide food to between 125,000 and 150,000 people per day in order to meet their ultimate goal of reaching more than six million people with food aid over the next 12 months. Many communities are inaccessible by land because of remaining high floodwaters and/or because roads and bridges have been washed away. WFP is transporting food by mule and air transport (primarily helicopter) to inaccessible populations.

WFP is requesting approximately \$600 million to feed people from August 2010 to July 2011, of which a portion will be spent on maintaining surviving livestock. Since November 2010, the WFP has received \$255 million, of which \$167 million is from the United States.

Effects on Health

Immediate and long-term health risks caused by the flood are high. Flooding can increase the spread of water-borne diseases when access to clean drinking water is compromised. Likewise, standing water caused by flooding can serve as breeding grounds for mosquitoes, increasing the potential for vector-borne diseases. These risks are heightened when there is significant population displacement, abnormal overcrowding, and a reduction in disease control activities.²⁰ Children are particularly vulnerable in these circumstances.

Access to health services and medicines is of key concern in Pakistan's flood-affected areas, as is the restoration of the country's public health infrastructure. The World Health Organization

²⁰ WHO, Flooding and Communicable Diseases Fact Sheet: Risk assessment and Preventive Measures, at http://www.who.int/hac/techguidance/ems/flood_cds/en/.

(WHO) Pakistan Health Cluster reports that 514 health facilities in flood-affected areas have been damaged or destroyed, including several hospitals.²¹ Of key concern is the insufficient access that women have to reproductive health services and the limited number of female health workers available.²² Poor hygiene and sanitation conditions in flood affected areas represent a major risk factor, particularly in settlements where individuals have informally or officially gathered. As of late August, UNICEF reports indicate that approximately 3.5 million flood survivors only have access to contaminated water.²³

Through the end of September 2010, over 6 million individuals received flood-related medical consultations. The main conditions reported are acute diarrhea, acute respiratory infections, skin diseases, and suspected cases of malaria.²⁴ Cholera is endemic in Pakistan and the threat of an outbreak in flood-affected areas remains critical; as of October 2010, a total of 99 confirmed cases were reported.²⁵ The WHO Health Cluster is currently treating all cases of acute watery diarrhea and severe dehydration as if they were cholera. The present health issues are both preventable and treatable; however, if clean water is not supplied and environmental hazards not addressed, WHO projects that a worst-case scenario includes 1.5 million cases of diarrheal diseases (including up to 140,000 cases of cholera) and up to 100,000 cases of malaria over the next three months.²⁶ In addition, there is increasing concern over dengue fever, Crimean-Congo haemorrhagic fever (CCHF), measles and polio, and malnutrition among children and pregnant women.²⁷ Displaced people returning home to areas with fewer health care facilities than in the settlements now represent a new high-risk health group.²⁸ Mental health care for survivors dealing with trauma is also an acknowledged priority.

Displaced Populations

A major concern is the fate of displaced populations in Pakistan. Several regional populations of Pakistanis have undergone cycles of displacement from militancy and military operations. Before the flooding, for example, the Pakistani military initiated the return of approximately 2.9 million displaced people in the Malakand region of the Khyber Pakhtunkhwa (KPK).²⁹ With the flooding,

²¹ Pakistan Health Cluster, "Floods in Pakistan, Bulletin No 19," September 28, 2010, at <http://www.whopak.org/idps/documents/bulletins/Health%20Cluster%20Bulletin%20No%2019-Final.pdf>, "Floods in Pakistan, Bulletin No 12," August 16, 2010, at <http://www.who.int/hac/crises/pak/sitreps/16august2010/en/index.html>.

²² Meriwether Beatty, "Under Water: Women's Access to Reproductive Health Care in Pakistan," *Global Health Magazine*, August 25, 2010, at http://www.globalhealthmagazine.com/gust_blog_under_water/.

²³ Kaiser Family Foundation, "At Least 3.5M Pakistanis Have No Access To Clean Water, Raising Risk For Waterborne Diseases," August 26, 2010, at <http://globalhealth.kff.org/Daily-Reports/2010/August/26/GH-082610-Pakistan.aspx>.

²⁴ World Health Organization, "Cholera in Pakistan," October 26, 2010, at http://www.who.int/csr/don/2010_10_25/en/.

²⁵ Pakistan Health Cluster, "Weekly Epidemiological Bulletin: Flood Response in Pakistan," Volume 1, Issue 7, October 4, 2010, at http://www.whopak.org/idps/documents/wmmrs/wmmr_flood_w39_2010.pdf.

²⁶ United Nations, Office for the Coordination of Humanitarian Affairs, "Pakistan: 3.5 Million Children at Risk of Deadly Disease," press release, August 16, 2010, at <http://www.reliefweb.int/rw/rwb.nsf/db900sid/VVOS-88DPRA?OpenDocument&query=children&emid=FL-2010-000141-PAK>.

²⁷ WHO, Communicable Disease Risk Among Populations Affected by Flooding in Pakistan, August 2010, at http://www.who.int/diseasecontrol_emergencies/publications/Pakistan_floods2010_08_04.pdf.

²⁸ Pakistan Health Cluster, "Floods in Pakistan, Bulletin No 19," September 28, 2010, at <http://www.whopak.org/idps/documents/bulletins/Health%20Cluster%20Bulletin%20No%2019-Final.pdf>; World Health Organization, "Crimean-Congo haemorrhagic fever (CCHF) and Dengue in Pakistan," October 25, 2010, at http://www.who.int/csr/don/2010_10_25a/en/index.html.

²⁹ International Crisis Group, *Pakistan: The Worsening IDP Crisis*, International Crisis Group, Asia Briefing no. 11,

many of the returning displaced populations have been displaced yet again with additional damage to infrastructure and households. In addition, nearly 90% of the 1.7 million registered Afghan refugees reside in flood-affected areas, many could be displaced and their resettlement is uncertain. The government is attempting to register internally displaced people, but several obstacles are preventing a comprehensive tally.

The recent flooding has damaged over 1.9 million houses, and pushed a similar amount of people to schools, colleges, and other makeshift sites for accommodations. According to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), a large need for emergency shelter exists. The majority of adults in these sites are women. Many of the men have endured the flooding and gone back to their property to salvage belongings and deter squatters.

There have been some reports about the potential of displaced people to cause political unrest in some cities. For example, thousands of people displaced by the floods, most of them ethnic Sindhis, are arriving in Karachi. According to some, this could be adding a volatile new element to the political dynamic there. While Sindhi nationalists are welcoming them, opponents such as Muttahida Qaumi Movement (M.Q.M.) members warn that they will create more violence.³⁰

Comparing Responses to Haiti and Pakistan: Lessons Learned

Some advocate that lessons learned from the earthquake disaster in Haiti could be applied to assisting Pakistan. However, differences in the area, people affected, and magnitude of the disaster might make comparisons tenuous. Haiti and Pakistan experienced megadisasters in 2010, each with different magnitudes and areas affected. For example, the floods in Pakistan affected more people (over 20 million) than the earthquake in Haiti (approximately 3 million). However, more people were killed and instantaneously displaced in Haiti than in Pakistan. Earthquakes are instantaneous and cause large numbers of fatalities compared to floods. Floods generally happen over time and cause less fatalities. Relief operations were implemented in both Pakistan and Haiti following natural disasters; however, the effects and dynamics of the disasters, areas affected, and timing of the disasters, in part, made their relief responses different. Many contend that aid donations from around the world were slower to materialize for Pakistan than other natural disasters, such as the earthquake in Haiti. For example, twice as much aid has been raised for Haiti (approximately \$3.3 billion) than for Pakistan (approximately \$1.6 billion). Indeed, after two weeks of the appeal for aid for Haiti and Pakistan, approximately \$157 dollars was raised per affected Haitian compared to \$15 dollars per affected Pakistani.³¹

Some potential reasons for the difference in donor response between these two disasters include

- The Haiti earthquake was an emergency situation that happened overnight and with immediate and visible tragedy, while the flooding in Pakistan occurred more slowly, over a longer period of time.
- There was less U.S. media coverage of Pakistan as compared with coverage in Haiti. Perhaps this was due to the suddenness of the earthquake in Haiti, and the ability of the media to access parts of Pakistan initially affected by the flooding.
- The high number of deaths and injuries associated the earthquake in Haiti (approximately 220,000 deaths and 300,000 injuries) compared with Pakistan

Brussels, Belgium, September 16, 2010.

³⁰ Carlotta Gall, "After Flood, Pakistani Officials Try to Quell Anger," *International Herald Tribune*, September 7, 2010, p. 3.

³¹ Elizabeth Ferris, "Natural Disasters and Human Rights: Comparing Responses to Haiti and Pakistan," Presentation at Center for Human Rights and International Justice, Boston College, November 3, 2010.

(approximately 2000 deaths and 3,000 injuries) might have made the necessity to donate greater for Haiti than Pakistan.

- The association of Pakistan with Islamic extremists and the war on terror might have limited appeal. Further, some might have had concerns over government corruption and the oversight of donations.
- The difference in U.S. donations might have been related to the proximity of the two countries to the United States. Haiti is closer to the United States and has a large expatriate population in the United States.
- Donor fatigue from the earthquake might have limited donations and resources for Pakistan.

Lessons Learned from Haiti

Response to the earthquake disaster in Haiti might provide some lessons learned for the flooding in Pakistan despite the differences in the disasters. This section discusses lessons learned in Haiti and provides some examples of their potential application to Pakistan.

The delivery of aid to Haiti after the earthquake was criticized by some as being too slow. Others countered this notion by arguing that the weakened capacity of the Haitian government, critically damaged infrastructure, and logistical challenges posed by the influx of massive aid into a city largely destroyed by the earthquake all contributed to delay and difficulties on the ground. In its six-month review, the U.N. Inter-Agency Standing Committee (IASC) refers to the “perception of a coordination deficit in the initial phase of the response operation” and a sense of a lack of leadership, but also points to significant improvements that were made over subsequent months.³²

The United States and other donors continue to work closely with the government of Haiti, the United Nations, NGOs, and the private sector through the U.N. cluster system.³³ Within days of the earthquake, relief activities were organized into twelve clusters led by various agencies, including emergency shelter, food, and health. Coordination through the cluster system, the convening of the Humanitarian Country Team for overall strategic guidance, the deployment of more senior humanitarian staff, and the establishment of other coordination structures, such as those that brought together military and humanitarian actors, reportedly eased decision-making and resource-tasking in the months following the earthquake.

Potential lessons learned by the international community that could be applied to Pakistan include³⁴

- Engaging more with civil society, local authorities, and displaced populations for greater understanding of the operating context and sustainable delivery of assistance;
- Understanding and working with various actors outside the immediate humanitarian context, not only the military, but also the private sector;

³² Ibid.

³³ Humanitarian relief sectors or clusters are typically established by the United Nations during humanitarian crises to help coordinate partners, prioritize resources, and facilitate planning.

³⁴ *30 Earthquakes, 28 Lessons Learned*, OneWorld.net, January 21, 2010, <http://us.oneworld.net/article/368623-30-earthquakes-28-lessons-learned> and *The Haiti catastrophe: lessons learned from previous operations*, by Ben Ramalingam, Overseas Development Institute (ODI) Blog January 19, 2010, http://blogs.odi.org.uk/blogs/main/archive/2010/01/19/lessons_for_haiti_aid_response.aspx.

- Engaging better with the government of the affected country and civil society partners;
- Providing cash for relief and buying locally wherever possible;
- Creating transitional shelter that can be turned into permanent dwellings, rather than focusing on emergency shelter and neglecting permanent shelter;
- Starting recovery as soon as possible without negatively affecting the relief effort; and
- Preparing for land-ownership disputes and not expecting the disaster response to resolve underlying political problems such as corruption, poor governance, underdevelopment, and social inequality.

Evaluations of the relief response in Haiti will likely continue to be conducted and debated as the humanitarian and recovery efforts move ahead. Some experts remain concerned about bureaucratic red tape in the humanitarian response, the capacity of the Haitian government, the role of the United States, and overall coordination issues between and among members of the international community, including the United Nations. These concerns can also be applied to Pakistan, with the added challenge of responding to a disaster that covers a large area with little viable infrastructure for transportation. Responses to earthquakes and flooding of the magnitude experienced in Haiti and Pakistan is almost certain to run into many obstacles because the challenges on the ground are so daunting. While managing expectations of what is possible under these circumstances is important, so too are the observations and lessons learned, which with time and hindsight may benefit the actions and plans of ongoing relief efforts in Haiti, Pakistan, and elsewhere.

Implications of Flooding on Selected Sectors of Pakistan

The floods are expected to have a long-term negative effect on the development prospects for Pakistan. There is considerable damage to infrastructure and agriculture, among other sectors. The United Nations, World Bank, and Asian Development Bank are conducting a needs assessment for Pakistan. Initial reports state that the need for recovery and reconstruction could reach \$9.7 billion. This section discusses some potential implications of the flooding on selected sectors in Pakistan including energy and infrastructure, the economy, and security.

Implications on Energy and Infrastructure

Rebuilding challenges include reconstruction of destroyed or damaged housing and infrastructure, including electrical generation and distribution, roads, bridges, rail lines, levees, dams/barrages, and irrigation works. Damage estimates include more than 5,000 miles of primary and secondary roads, 400 bridges, 400 miles of railways, 11,000 schools, and 200 health facilities, with damage being particularly severe in northern regions like the Swat Valley.³⁵ The difficulty, time, and expense of rebuilding this lost infrastructure is likely to be substantial. For example, the World

³⁵ United National Institute for Training and Research, *The Pakistan Floods of 2010: Flood Analysis in Pakistan Based on Time Series of Satellite Data Recorded from 28 July to 16 September 2010*, September 20, 2010, http://unosat-maps.web.cern.ch/unosat-maps/PK/FL20100802PAK/UNOSAT_PAK_FL2010_EarlyRecoveryOverview_v2_HR.pdf; Carlotta Gall, "Pakistan flood sets back years of gains on infrastructure," *New York Times*, August 26, 2010; OCHA Situation Aug 27 Report. Also, more than 6,000 schools are being used as emergency shelters.

Bank and Asian Development Bank jointly estimate that the floods caused \$9.7 billion of damages.³⁶ That figure includes damage across several sectors, including loss of physical infrastructure and other economic losses. The full study has not yet been released, but researchers have commented that agriculture and roads were particularly hard hit.³⁷ Two U.S. university researchers using primarily data on the flood characteristics and pre-flood economic data estimated damages between \$5.1 billion and \$7.1 billion to building and transportation infrastructure and \$2.12 billion in losses from the disruption of trade.³⁸

Floods shut down some electricity, oil, and gas facilities. According to various media reports, floods closed approximately 3 gigawatts of power generation capacity.³⁹ (Pakistan's maximum power generation capacity before the flood was around 19 gigawatts.⁴⁰) Flooding damaged generation facilities and transmission infrastructure, and it cut off power plants from their supply of generation fuels such as oil and natural gas.⁴¹ Output at refining and natural gas facilities also was curtailed due to transportation disruptions.⁴² Most of this energy production and transportation capacity has been restored.^{43, 44} However, the damage has highlighted and exacerbated Pakistan's pre-existing energy problems. Prior to the floods, the country was already suffering from a shortage of electricity generation capacity and rolling blackouts.⁴⁵ The cost of recovering from flood damage sets back efforts to improve electricity supply. Prior to the floods, the Obama Administration had pledged \$185 million toward various measures to improve Pakistan's energy supply.⁴⁶ Assessments of the value and replacement cost of other infrastructure

³⁶ Asian Development Bank, "ADB-World Bank Assess Pakistan Flood Damage at \$9.7," press release, October 14, 2010, <http://www.adb.org/Media/Articles/2010/13363-pakistan-flooding-assesments/ADB-WB-pakistan-assessment.pdf>.

³⁷ Ibid.

³⁸ Michael J. Hicks and Mark L. Burton, *Preliminary Damage Estimates for Pakistani Flood Events, 2010*, Center for Business and Economic Research, Ball State University, August 2010, <http://cber.iweb.bsu.edu/research/PakistanFlood.pdf>. The analysis included primarily commercial and residential building losses and rail and highway impacts.

³⁹ Nathaniel Gronewold, "After the Pakistan Deluge, Blackouts Spread," New York Times, October 12, 2010, <http://www.nytimes.com/cwire/2010/10/13/13climatewire-after-the-deluge-blackouts-spread-15812.html>.

⁴⁰ Energy Information Administration, "International Energy Statistics," U.S. Department of Energy, <http://tonto.eia.doe.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=2&pid=2&aid=7>. Latest figures are for 2007.

⁴¹ Khalid Mustafa, "Deluge impact: power system still deprived of 2,796 MW," The News (International), Aug 27, 2010, <http://www.thenews.com.pk/27-08-2010/National/1518.htm>.

⁴² Natalie Obiko Pearson, "Pakistan Flood Shuts Biggest Refinery, Cuts Natural Gas Output," Bloomberg Businessweek, August 11, 2010, <http://www.businessweek.com/news/2010-08-11/pakistan-flood-shuts-biggest-refinery-cuts-natural-gas-output.html>.

⁴³ "Flood victims exempted from electricity bills," Daily Times (Pakistan), September 23, 2010, http://www.dailytimes.com.pk/default.asp?page=2010%5C09%5C23%5Cstory_23-9-2010_pg7_13

⁴⁴ Khurram Anis, "Pakistan's Biggest Refinery Resumes Production After Floods," Bloomberg, September 20, 2010, <http://www.businessweek.com/news/2010-09-20/pakistan-s-biggest-refinery-resumes-production-after-floods.html>

⁴⁵ The Pakistani government has been increasing electricity tariff rates, a politically unpopular measure, in order to reduce subsidies and spur energy investment. These adjustments are part of Pakistan's program with International Monetary Fund and has the support of other multilateral institutions and the U.S. Department of State. Note that flood affected households have been exempted from electricity bills according to the Minister for Water and Power, Raja Pervaiz Ashraf (see Daily Times, 2010 above).

⁴⁶ Following the U.S. Congress's passage of the Enhanced Partnership with Pakistan Act of 2009 (P.L. 111-73), the U.S. Department of State launched the Pakistan Signature Energy Program. See U.S. Department of State, "The United States Announces Phase II of the Signature Energy Program for Pakistan," press release, July 19, 2010, <http://www.state.gov/r/pa/prs/ps/2010/07/144820.htm>, and "The United States Announces the Pakistan Signature Energy Program," press release, October 28, 2009, <http://www.state.gov/r/pa/prs/ps/2009/oct/130995.htm>.

(e.g., energy, medical, and educational facilities) or a reconstruction timeline were not available as of late October. Among the challenges for rebuilding the infrastructure are prioritizing reconstruction actions; the availability of materials, equipment, and expertise; and mechanisms for oversight of construction and use of funds.

Implications for Agriculture

Agriculture is one of the primary mainstays of Pakistan's economy. It accounts for approximately 23% of GDP, employs about 43% of the labor force and provides about 60% of the country's export earnings.⁴⁷ Arable crops, livestock, and fishing and forestry represent 65%, 31%, and 4% of Pakistan's agricultural GDP, respectively. Pakistan typically has two major growing seasons, *Rabi* (winter crop, spring harvest) and *Kharif* (summer crop, fall harvest).⁴⁸ The *Kharif* crop is also called the summer or monsoon crop because it is grown during the time of the southwest monsoons, which typically occur from July to October. During the *Kharif* season, agricultural activities take place in rain-fed and irrigated areas. During the *Rabi* season, agricultural activities take place only in the irrigated areas. Nearly 80% of the cropped area is irrigated, producing about 90% of Pakistan's total farm output.

Pakistan's agriculture sector has suffered severe losses as a result of the torrential rain and flooding of July and August 2010. The majority of adverse flooding impacts have occurred in four provinces: the Punjab, often called the breadbasket of Pakistan, and Khyber Pakhtunkhwa (KPk) in the north, and the provinces of Sindh and Baluchistan in the south, all of which have significant crop production. Approximately 80% of people in the flood-affected areas depend on agriculture for their livelihood. The affected populations have suffered severe crop, livestock, and grain stock losses, though assessments of medium and longer term impacts on the agricultural sector in Pakistan are still ongoing.

Crops

Damage assessments by U.N. agencies led by the FAO estimate that about 3.3 million hectares countrywide of standing crops, including rice, maize, cotton, sugarcane, fruit orchards and vegetables, have been damaged or lost completely due to flooding, with about 1.3 million hectares affected in the four hardest hit provinces.⁴⁹ This represents about 14% of the total cropped area in 2008.⁵⁰ The cereal crops of the current *Kharif* or monsoon season (including rice, maize, sorghum, and millet), planted in May/July and scheduled to be harvested from September onward, typically account for approximately 35% of the annual national cereal production. Reports from FAO and the Asian Development Bank have estimated that as much as 25% of the cotton crop has been affected. Pakistan consequently may be a net importer rather than an exporter of cotton in 2010 in order to support its textile industry. Substantial losses of important export crops such as cotton, sugarcane, and rice, will have a large negative impact on the

⁴⁷ International Fund for Agricultural Development (IFAD), *Islamic Republic of Pakistan: Country strategic opportunities programme*, Rome, March 25, 2009, <http://www.ifad.org/gbdocs/eb/96/e/EB-2009-96-R-9.pdf>.

⁴⁸ *Rabi* crops, such as wheat, barley, maize, peas, oats, and mustard, are typically planted in winter from October to December and harvested in spring from April to June; *Kharif* crops, such as millet, rice, corn, pulses, cotton, and soybean, are typically planted with the onset of the monsoon in different parts of the country, often between July and August, and then are harvested in the fall from September to October. In between the *Rabi* and the *Kharif* seasons there can be a short season during the summer months known as the *Zaid* season.

⁴⁹ FAO, *Pakistan Flooding: Executive Brief*, October 5, 2010, http://www.fao.org/fileadmin/templates/tc/tce/pdf/Pakistan_Floods_Executive_Brief_05_October_2010.pdf.

⁵⁰ FAOSTAT estimates Pakistan's total arable land to be about 23 million hectares.

country's trade balance and household incomes, while losses in the production of staple cereals will exacerbate household food security issues in the country.

While the floods are causing severe negative effects on agricultural production in the current season, the damage and impacts will likely have broader implications for future agricultural production and food security in Pakistan. Wheat is an example of this issue.

Wheat is the main staple in Pakistan, providing about 35% of the average per capita calorie requirement in 2008. Wheat is mainly irrigated and contributes approximately two-thirds of the annual national cereal production. It is cultivated primarily during the *Rabi* season, when it is typically planted in October/November and harvested in April/May. Official final estimates of wheat production from the 2009/2010 *Rabi* season, which was successfully harvested prior to the flood, were close to 23.9 million tonnes, a near record amount. However, the flood waters have resulted in serious losses of wheat stocks that are held at the household level. These reserves serve as the primary source of food for most rural families until the next harvest. Estimates made by FAO indicate that 500,000 to 600,000 tonnes of wheat stocked at the farm level may have been damaged or lost to the floods.

The losses of wheat at the household level could also have a negative impact on planting of the 2010/11 *Rabi* season, which typically begins in October/November. The floods have resulted in the loss of seeds for planting; other agricultural inputs such as fertilizer; livestock; and savings. In addition, damage to irrigation facilities and wells could affect wheat production in the next *Rabi* season, as 90% of Pakistan's wheat crop is irrigated. The flooding will also negatively affect Pakistan's ability to export agricultural commodities. Requests from Punjabi government officials who wrote to the federal government asking for permission to export excess stockpiles of wheat, generated outrage from various aid agencies who claimed that the country's food situation remains "too precarious" to justify exporting crops. In September 2010, Pakistan's Economic Coordination Committee voted to ban all wheat exports in order to ensure that necessary food was not being sent outside of the country.⁵¹

FAO has established a response management team and is working in collaboration with the WFP and the International Fund for Agricultural Development (IFAD) in flood-affected provinces as well as across Pakistan to provide technical assistance to meet three primary goals: meeting the 2010/11 *Rabi* wheat planting season, rehabilitating land and irrigation infrastructure, and saving livestock. FAO is providing critical agricultural inputs, such as seed, fertilizers, and farming tools to clear water-logged fields, to hundreds of thousands of farmers for the spring planting season. In October 2010, the FAO announced that it had reached over 532,000 families with agricultural inputs for the *Rabi* wheat season, 19,000 families with irrigation support, and over 163,000 families with animal feed and veterinary supplies.⁵²

Global agricultural assistance efforts for Pakistan in response to the flooding have largely been underfunded.⁵³ On October 29, 2010, the U.S. Agency for International Development (USAID) committed \$16 million to FAO to provide agricultural inputs to flood-affected families in Balochistan Province.⁵⁴ The funding complements similar programs in KPk and Punjab provinces

⁵¹ See <http://www.criticalthreats.org/pakistan-security-brief/pakistan-security-brief-%E2%80%93-october-27-2010>

⁵² FAO, op. cit.

⁵³ As of September 2010, FAO had received about USD\$46 million in donor contributions, out of an estimated total need of USD\$107 million for agricultural assistance. For more information about FAO's component of the overall Revised Pakistan Floods Emergency Response Plan, see http://www.fao.org/fileadmin/templates/tc/tce/pdf/PAKISTAN_REVISIED_FLOODS_EMERGENCY_RESPONSE_PLAN_.pdf.

⁵⁴ See USAID press release: <http://www.usaid.gov/pk/newsroom/news/disaster/101029.html>

and will provide wheat seed, vegetable seed, and fertilizer packages to about 680,000 family members—particularly women—and will also provide veterinary care and fodder to about 55,000 animals.⁵⁵

Livestock

The floods have affected the most densely populated livestock areas in Pakistan. The national livestock population was estimated at 217 million animals in 2006, including cattle, buffalo, sheep, goats, donkeys, and poultry. Estimates show that over 1.2 million livestock and 6 million poultry have perished⁵⁶ In KPK alone, a rapid agricultural sector assessment by FAO found that over 67,000 head of small and large livestock have died, and almost 600,000 are suffering from malnourishment and sickness. In addition, poultry losses have been estimated in the millions, with the entire poultry stock wiped out in some areas. Many animals died because they had to be left behind when people were rescued by the Pakistani military and other rescue services.

FAO stated that “millions of surviving animals are now facing severe feed shortages, threatening generations of Pakistan’s livestock,”⁵⁷ and that one of its primary priorities is maintaining and keeping healthy the surviving population of livestock. Getting feed and veterinary services to those in need continues to be a major challenge as supplies of animal feed such as straw and forage is in limited supply, and transportation of goods and services is severely limited due to considerable damage to critical infrastructure. FAO is working to reach tens of thousands of households with supplementary feed and veterinary support.

Economic Implications of the Floods

As the flood waters continue to recede, various entities are disclosing preliminary assessments of the economic impact of the disaster. An August estimate by economic advisors to Pakistan’s Ministry of Finance reportedly set the flood losses at \$12-15 billion.⁵⁸ The Asian Development Banks (ADB) and the World Bank (WB) released on October 14, 2010, a joint estimate of the flood damage at \$9.7 billion.⁵⁹

The broader short-term economic effects of the flooding are already being felt. The floods have sent food prices soaring, exacerbating fears of a new round of high inflation. In addition, greater government expenditures on the emergency relief effort are almost certain to widen the fiscal deficit. Reportedly, the United Nations has estimated that the floods will increase Pakistan’s fiscal expenditures by \$4 billion in fiscal year 2010/2011.⁶⁰ A preliminary assessment submitted to Pakistan’s Minister of Finance has estimated that there may be zero real GDP growth and 25% inflation in the current fiscal year, compared to the IMF targets of 4.5% real GDP growth and 9.5% inflation.⁶¹ Pakistan’s consumer price index (CPI) increased by 15.7% in September 2010.

⁵⁵ See USAID, <http://www.usaid.gov/pk/downloads/da/10.29.10-USAID-DCHAPakistanFloodsFactSheet4-FY2011.pdf>

⁵⁶ FAO, op. cit.

⁵⁷ See <http://www.fao.org/news/story/en/item/44803/icode/>.

⁵⁸ “Pakistan: Havoc Strains External Balances, cuts GDP,” *Khaleej Times*, August 30, 2010.

⁵⁹ Asian Development Bank, “ABD-World Bank Assess Pakistan Flood Damage at \$9.7 Billion,” press release, October 14, 2010.

⁶⁰ Farhan Bokhari, “Pakistan Seeks \$10bn Loan Restructure,” *Financial Times*, August 19, 2010.

⁶¹ “We’re Looking at 0% GDP Growth and 25% Inflation,” *The International News*, August 23, 2010. Pakistan’s fiscal year runs from July 1 to June 30.

Other estimates predict real GDP growth of about 2%-3% for the current fiscal year, compared to 4.1% in the previous fiscal year.⁶²

Pakistan may also face another balance of payments crisis like it did in the autumn of 2008.⁶³ Agricultural production not only plays a critical role for Pakistan's domestic economy, it also is important for its exports. Pakistan's rice exports in 2009 were worth \$1.8 billion, accounting for 10% of its exports. Cotton and cotton yarn exports in 2009 totaled \$3.2 billion, or 18% of Pakistan's total exports. Cotton is also vital for Pakistan's other leading exports—clothing and other textile articles—which together were worth \$5.8 billion, or 33% of total exports. A slow recovery in agricultural production will adversely effect its balance of trade and potentially contribute to a balance of payments crisis. Pakistan held \$17.1 billion in foreign exchange reserves as of October 15, 2010.

The long-term economic effects are more difficult to assess. According to one source, repairing damaged infrastructure, including countless destroyed roads, bridges, and dams, could cost up to \$15 billion.⁶⁴ Also, as discussed earlier, the World Bank and ADB have estimated \$9.7 billion in damages in a preliminary report. Critical factors that will influence the speed of Pakistan's economic progress over the next few years are the pace of the recovery of the agricultural sector, the status of the millions of displaced people, and the level of international support for the relief and reconstruction assistance.

The ADB has offered a loan of \$2 billion and the World Bank has offered a loan of \$1 billion to be used primarily in the reconstruction of Pakistan's infrastructure damaged by the floods. The Friends of Democratic Pakistan (FODP) met in October 2010, in Brussels to discuss potential ways to bolster the Pakistani economy in the wake of flooding, among other things.⁶⁵ Some proposals included providing trade concessions on selected products, opening up selected EU markets, and encouraging Pakistan to increase its tax base.⁶⁶ The FODP also pressed the Pakistan government to continue to implement economic reforms, including broadening its tax base.

Pakistan's Finance Minister Abdul Hafeez Sheikh was in Washington the week of August 23-27, 2010, to meet with the IMF as part of the fifth review of the IMF loans. On November 20, 2008, the IMF's Executive Board approved a SDR 5.169 billion (at the time, the equivalent of \$7.65 billion)⁶⁷ stand-by arrangement for Pakistan to avert a balance of payments crisis. The IMF subsequently approved an additional SDR 2.067 billion (\$3.22 billion) in assistance on July 27, 2009. These loans were to be paid out in seven installments (called "tranches"), ending in November 2010, following reviews of Pakistan's economic progress. As part of the loan agreement, Pakistan promised to make a number of changes in fiscal and monetary policy (commonly known as "conditionalities"), including gradually lowering its fiscal deficit as a

⁶² Economist Intelligence Unit, "Pakistan Country Report," *Economist*, September 2010.

⁶³ For details of Pakistan's 2008 balance of payments crisis, see CRS Report RS22983, *Pakistan's Capital Crisis: Implications for U.S. Policy*, by Michael F. Martin and K. Alan Kronstadt.

⁶⁴ "Debts Pushing Pakistan to the Brink of Ruin," *The Independent*, August 22, 2010.

⁶⁵ On September 26, 2008, an ad-hoc group of interested nations and organizations met on the sidelines of a United Nations General Assembly session to discuss Pakistan balance of payments crisis. Initially called the "Friends of Pakistan," the group held its first ministerial meeting on April 17, 2009, in Tokyo. The group subsequently renamed itself the Friends of Democratic Pakistan (FODP).

⁶⁶ Friends of Democratic Pakistan, "Joint Communiqué," press release, October 15, 2010.

⁶⁷ The SDR, or "special drawing right" is the official unit of account for the IMF. Its value is determined by a basket of 16 major currencies, including the U.S. dollar. As such, the exchange rate between the SDR and the U.S. dollar varies over time. Unless otherwise noted, the U.S. dollar equivalents cited in the memo are valued using the exchange rate at the time of the event.

percentage of GDP. The agreement also stipulated that Pakistan would have to repay the loans starting in 2012.

Prior to the floods, Pakistan had failed to meet several of the IMF conditionalities, and the IMF was reportedly applying pressure on Pakistan to meet its commitments. Pakistan's fiscal deficit has increased to 6.2% of GDP, a level exceeding the IMF target of 5.1% of GDP. The cost of the emergency relief efforts are likely to make it impossible to meet the IMF target. Pakistan reportedly asked the IMF to relax this and other conditionalities during the August meetings in Washington. It also requested the release of the remaining balance of the IMF loans, worth about \$2.6 billion. While the IMF decided to delay the release of the next tranche, on September 16, it did announce a \$451 million emergency loan to help Pakistan deal with the aftermath of the flooding.

In early November, the IMF and Pakistan government again met to discuss the economic situation in Pakistan. While Pakistan reportedly pressed for the release of the remaining tranches, the IMF focused on the need for additional economic reforms. For the IMF, the key issues are: the implementation of reformed general sales tax (RGST), which Pakistan was supposed to have enacted in July 2010; eliminate the remaining subsidies for electricity; and reducing the fiscal deficit. Pakistan has until December 13, 2010, to make the necessary economic reforms or lose access to the remaining \$1.7 billion of the stand-by arrangement.

The Pakistan government has made some efforts to respond to the economic impact of the floods and the demands of the IMF. Pakistan's National Oversight Disaster Management Council has developed a \$7.7 billion reconstruction plan. However, according to the plan, the Pakistan government would only provide \$3.8 billion of the funds and seek \$3.4 billion in international assistance; the remaining \$500 million would supposedly come from "other sources." Pakistan's fiscal deficit was also worsened by the 25% increase in Pakistan's defense budget announced on September 23, 2010.⁶⁸ The increased military expenditures were to be used for major military operations against the Taliban in the tribal areas bordering Afghanistan. Part of the increased military outlays are to be financed by cuts in other areas of the federal budget. In addition, the Pakistan government has reportedly promised the IMF to raise the electricity rates by 2.2% per month until July 2011—a total increase of 17.6%.⁶⁹ On November 15, 2010, the IMF denied that such a deal had been struck with the Pakistan government.⁷⁰

Another economic problem looming on the horizon is the cost of servicing the IMF loans and other debt incurred since 2008. Pakistan's current outstanding debt is \$55.5 billion, which is 56% of GDP. Under the current agreement, repayments on the IMF loan will cost the Pakistan government over \$3 billion per year starting in fiscal year 2012/2013. There is concern that the cost of servicing its debts may undermine Pakistan's economic recovery.

Political-Security Implications of the Flood⁷¹

The Obama Administration's strategy toward Pakistan, and the broad goals of the Enhanced Partnership With Pakistan Act of 2009 (P.L. 111-73, also known as the Kerry-Lugar-Berman act), are likely to be significantly frustrated by the worst natural disaster in Pakistan's 63-year history. Central to the provisions of P.L. 111-73 was the authorization of \$7.5 billion in nonmilitary U.S. assistance to Pakistan for the period FY2010-FY2014, a major increase in economic and

⁶⁸ "Pak Hikes Defence Outlay by Rs 110 Bn," *The Economic Times*, September 23, 2010.

⁶⁹ Sajid Chaudhry, "Power Tariff to Go Up by 17.6 Percent," *Daily Times*, November 2, 2010.

⁷⁰ Irshad Ansari, "We Didn't Ask Pakistan to Hike Power Tariff," *The Express Tribune*, November 15, 2010.

⁷¹ See also CRS Report R41307, *Pakistan: Key Current Issues and Developments*, by K. Alan Kronstadt.

development aid aimed at bolstering Pakistan's institutions and infrastructure, as well as demonstrating a long-term U.S. commitment to partnership with that country. Many observers now consider it likely that a portion of any funds appropriated in the future will be diverted to recovery efforts and could thus be unavailable for the types of capacity-building programs and projects originally envisaged.

In the nearer-term, U.S. interests in countering Islamist militancy in the region, and strengthening Pakistan's democratic institutions are under greater threat due to the chaos and destruction caused by widespread flooding there.⁷² While ongoing U.S. and NATO military operations in neighboring Afghanistan are relatively unaffected, the circumstances inside Pakistan appear to be providing time and space for both Afghan and Pakistani Taliban militants, as well as numerous other assorted indigenous Islamist extremist groups, to regroup. Moreover, by undertaking disaster relief efforts in areas poorly served by the government, Islamist charities linked to such groups could boost recruitment and improve their standing with affected residents. The U.S. government is actively seeking to counter this possibility through its own ground response, with officials in Washington viewing the catastrophe as an opportunity to demonstrate America's commitment to and friendship with the Pakistan people. After surveying the affected areas in person, the Chairman of the Senate Foreign Relations Committee, Senator John Kerry, declared that helping Pakistan "is in all of our interests."⁷³

On the political front, an already weak civilian government in Islamabad is criticized for what has been viewed as a slow and woefully insufficient response, further damaging its credibility.⁷⁴ In contrast, the Pakistani military, widely viewed as the country's most relatively capable institution, has benefited in the public eye following its energetic relief efforts in affected areas. For some observers, this dynamic could threaten recent progress toward democracy in a country that has seen four military coups in the past 42 years.

Pakistan-U.S. Relations, Militant Groups, and Public Sentiment

Potential to Improve U.S. Standing in Pakistan

Hopes abide that the rapid and major disaster relief assistance being provided by the United States may contribute to lessening widespread and long-held anti-American sentiment in Pakistan. In this respect, the tragedy could also be seen as an opportunity to narrow the gaping "trust gap" in U.S.-Pakistan relations. The U.S. Special Representative for Afghanistan and Pakistan, Ambassador Richard Holbrooke, has been explicit in seeking this goal.⁷⁵ By some

⁷² "U.S. Strategy in Pakistan Upended by Floods," *New York Times*, August 19, 2010. Even before the flooding began, Pakistan was suffering from multiple armed insurgencies, major terrorist attacks on cities, sectarian violence, a teetering economy, lack of state services, and a largely impotent civilian administration (see, for example, Ahmed Rashid, "The Anarchic Republic of Pakistan," *National Interest*, August 24, 2010).

⁷³ John Kerry, "A Call for Help in Flood-Ravaged Pakistan" (op-ed), *Boston Globe*, August 29, 2010. See also David Ignatius, "The Case for Aiding Flooded Pakistan" (op-ed), *Washington Post*, August 29, 2010.

⁷⁴ Numerous anecdotal reports from the ground indicate that, even as of early September, there had been no notable government response across wide swaths of affected areas (CRS interviews with returning relief workers, September 15, 2010).

⁷⁵ "U.S. Offers Aid to Rescue Pakistanis and Reclaim Image," *New York Times*, August 15, 2010. See also Shuja Nawaz, "A Chance to Build Trust in Pakistan" (op-ed), *Washington Post*, August 12, 2010. There is some empirical evidence that such a dynamic occurred in the recent past: A Pew poll taken shortly before Pakistan's catastrophic October 2005 earthquake found only 23% of Pakistanis expressing a favorable view of the United States, the lowest percentage for any country surveyed. That percentage doubled to 46% in an ACNielsen poll taken after large-scale U.S. disaster relief efforts in earthquake-affected areas, with the great majority of Pakistanis indicating that their perceptions

accounts, this is taking place, although the evidence remains anecdotal.⁷⁶ Yet there is also evidence that Pakistanis are largely unaware of U.S. largesse in the recent past and do not report seeing tangible benefits from same. According to one recent opinion survey, about half of Pakistani respondents believe the United States gives little or no assistance to their country, suggesting that public relations gains from aid may be fleeting, at best.⁷⁷ Moreover, while the U.S. government has committed \$200 million to date, private contributions have been quite small relative to those given for other recent natural disasters, potentially fueling Pakistani resentment and distrust.⁷⁸

Islamist Extremists Groups and Disaster Relief

Some extremist-run charities have undertaken relief efforts in areas where government aid has been lacking. By providing food, shelter, and other benefits to desperate victims, such organizations may win sympathy and even (additional) future support from affected residents. Of potential concern, especially from a U.S. perspective, are the activities of the Falah-i-Insaniyat and Jamaat-ud-Dawa. (JuD). These are the charity and political wings, respectively, of Lashkar-e-Taiba (LeT), a U.S.-designated Foreign Terrorist Organization (FTO) held responsible for the Mumbai attack of November 2008, as well as many other terrorist activities.⁷⁹ When asked about the likelihood of extremist groups gaining strength and influence through their own relief activities, Secretary of State Clinton said she did not think it was great and suggested that such reports were being overstated.⁸⁰

Another U.S.-designated FTO, the Tehrik-i-Taliban Pakistan (TTP, also known as the Pakistani Taliban) denounced U.S. assistance and called for a boycott of all Western aid.⁸¹ Although the TTP has threatened to attack Western aid workers in the country since the floods began, no such attacks are known to have taken place, and the U.S. military is taking significant precautions to ensure the safety of own its forces, as well as for other U.S. aid workers in-country. In late August, a senior U.S. military officer in Pakistan stated that he had “seen no security threat whatsoever” to U.S. personnel in Pakistan in the preceding three weeks, and he lauded the Pakistani military for its provision of force protection.⁸²

had been positively influenced by witnessing such efforts.

⁷⁶ “US Aid Winning Friends in Flood-Ravaged Pakistan,” Associated Press, August 10, 2010; “Opinions of U.S. Rise Along With Airlifts,” *Washington Post*, August 12, 2010; “In Pakistan, U.S. Hopes Aid Builds Goodwill,” *USA Today*, September 2, 2010. A recent study on the effects of foreign aid following Pakistan’s October 2005 earthquake found that many “hearts and minds” were, in fact, won by the infusion (“Study: Aid After 2005 Quake Won Trust in Pakistan,” *Washington Post*, September 7, 2010).

⁷⁷ “U.S. Aid Buys Little Goodwill,” *Washington Post*, August 24, 2010.

⁷⁸ “In Pakistan, A Flood of Aid and Mistrust,” *Washington Post*, September 6, 2010; “Pakistan Floods: Could ‘Donor Fatigue’ Harm US-Pakistan Relations?,” *Christian Science Monitor*, September 8, 2010.

⁷⁹ The JuD is reported to have distributed thousands of packages containing food, soap, and other personal effects, along with 3,000 rupees (about \$35) in cash (“Islamist Charity Aims to Be Pakistani’s Salvation,” *Reuters*, September 3, 2010).

⁸⁰ See the State Department’s August 19, 2010, transcript at <http://www.state.gov/secretary/rm/2010/08/146100.htm>.

⁸¹ “Pakistani Taliban Urge Rejection of Foreign Flood Aid,” *Agence France Presse*, August 11, 2010. Even a senior leader of a mainstream Islamist party, the Jamaat-e-Islami, labeled aid from the United States (and India) as “poison” for the Pakistani nation and people (“Pakistan Islamist Party Says US, India Funds ‘Poison’ for Flood Victims,” BBC Monitoring South Asia, August 25, 2010).

⁸² “Mullen Shares Concern for Aid Workers,” Armed Forces Press Service, August 27, 2010; Brig. Gen. Michael Nagata quoted in the August 25, 2010, Pentagon transcript at <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4677>.

Domestic Political Effects

Pakistan's particular circumstances—poor government capacity, struggling economy, sagging infrastructure, multiple armed insurgencies, and all manner of regional, sectarian, and class divisions—leave it ripe for potentially major upheaval as a result of the floods. In the view of some analysts, the aggregated pressures are so great that the current national government is seen as unlikely to survive and complete its five-year term set to end in the spring of 2013.⁸³ Some more alarmist observers have even suggested that the Pakistani state itself could collapse, although most believe this is a remote possibility.⁸⁴

Status of the Civilian Government

The current national coalition government was seated in the spring of 2008 after relatively free and fair elections. It is led by the Pakistan People's Party (PPP) of President Asif Zardari and Prime Minister Yousaf Raza Gilani. After flooding began in late July, President Zardari came under intense criticism for going ahead with a planned state visit to Europe even as the scope of the devastation was coming clear. His early August travel, which included costly stays at luxury hotels, hugely exacerbated a pre-existing perception of the President as detached from the human suffering taking place in his own country.⁸⁵ Zardari contended that he had used the trip to "mobilize foreign assistance" and "had to choose substance over symbolism."⁸⁶ Nevertheless, Pakistanis appear to feel significant anger toward politicians at all levels of government, and this sense of abandonment in time of need could significantly weaken the standing of democratic forces in the country.⁸⁷ One senior Pakistani analyst saw both the federal and provincial government responses as representative of the broader "abysmal failure" of the country's political class. He predicts "catastrophic consequences" for the PPP-led national government if relief work is not undertaken efficiently and with transparency.⁸⁸ In a country where corruption and political patronage are rife, angry accusations have arisen that officials are manipulating the distribution of relief resources to their political allies.⁸⁹

Internal Administrative Issues

The internal political effects of the floods remain unclear to date, but are likely to be quite serious. There have been signs that Pakistan's already fraught center-province and interprovincial tensions are being exacerbated by economic hardship and competition for resources. For example, in the densely populated Punjab province, home to more than half of Pakistan's total population, the provincial government of former Prime Minister Nawaz Sharif's Pakistan Muslim League-Nawaz (PNL-N, which represents the main opposition at the national level) has tussled with the federal government over aid disbursement issues. The PML-N may seek to take advantage of anti-government sentiments to make political inroads in the Sindh province, home to the PPP's

⁸³ "Floods in Pakistan Carry the Seeds of Upheaval," *New York Times*, September 6, 2010.

⁸⁴ "Pakistan Flood Crisis Raises Fears of Country's Collapse," McClatchy News, August 13, 2010.

⁸⁵ In a comparison to President G.W. Bush's response to hurricane devastation on the U.S. Gulf Coast in 2005, one critic called the floods "Zardari's Katrina" (Fatima Bhutto, "Zardari's Katrina," *Foreign Policy* (online), August 4, 2010).

⁸⁶ Asif Ali Zardari, "Pakistan's Project of Renewal" (op-ed), *Wall Street Journal*, August 11, 2010.

⁸⁷ "Will Slow Response to Pakistan Floods Threaten Democracy?," *Christian Science Monitor*, August 12, 2010.

⁸⁸ Hasan-Askari Rizvi, "Is There a Way Out?" (op-ed), *Daily Times* (Lahore), August 15, 2010. See also Mohsin Khan and Shuja Nawaz, "Pakistan: Assessing the Tragedy," *New Atlanticist* (online), August 26, 2010.

⁸⁹ "Floods in Pakistan Carry the Seeds of Upheaval," *New York Times*, September 6, 2010.

core votebank.⁹⁰ Meanwhile, there have been credible allegations that rich landowners, mostly in Sindh, allowed levees to burst so that floodwaters would be diverted to unprotected areas, sparing their crops. These actions may have had a negative impact on the neighboring Baluchistan province.⁹¹

Role and Standing of the Pakistani Military

Pakistan's military has always played a key role in the country's governance; the country has been ruled directly by the military for more than half of its existence as an independent state. The ultimately unpopular rule of President-General Pervez Musharraf, who seized power through unconstitutional means in 1999 and left office in 2008, was harmful to the military's public image, which typically rates as the most positive among Pakistani institutions. Since his 2007 ascension to the pinnacle of Pakistani military rank, current Chief of Army Staff General Ashfaq Pervez Kayani has worked with considerable success to restore the army's prestige while at the same time withdrawing it from any overt role in governance. With his organization taking the lead in providing flood relief, Kayani's influence has only grown, and the military's Rawalpindi headquarters is again seen by many as the sole effective locus of state power in Pakistan.⁹² The implications are worrisome for proponents of representative government who wish to see Pakistan's democratic institutions strengthened further. The U.S. government explicitly supports Pakistani democracy. When asked about recent controversial statements, a U.S. State Department spokesman said, "Pakistan has a civilian government and we think it is the best form of government to take."⁹³ More recently, Prime Minister Gilani assured the nation that a military takeover was out of the question.⁹⁴

Counterinsurgency Operations

Almost immediately upon incoming reports of this latest natural disaster in Pakistan, fears arose in Washington, Islamabad, and other world capitals that resulting chaos and destruction would open up space for Pakistan's numerous Islamist militant groups to regroup and perhaps even recover from losses suffered from recent, damaging battles with the Pakistani military. There have already been some reports of militants exploiting the situation with attacks on government security targets, and devastating suicide bomb attacks against minority Shia demonstrate that the threat posed by terrorist groups has not subsided as a result of the flooding. Since early August, some 60,000 Pakistani army troops were diverted to disaster relief efforts. In mid-month, a

⁹⁰ "National Flood Relief Strategy" (editorial), *Daily Times* (Lahore), September 6, 2010; "Pakistan After the Floods: A Bird's Eye View," IHS Global Insight, September 9, 2010.

⁹¹ "Pakistan Landlords 'Diverted Flood Water,'" BBC News, September 2, 2010. A former Pakistani Prime Minister from Baluchistan accused members of the government of purposefully redirecting floodwaters in his home province, saying the actions reflected Islamabad's long-standing disregard for Baloch well-being and would prove costly to it in terms of public sentiment ("Floods in Pakistan Carry the Seeds of Upheaval," *New York Times*, September 6, 2010).

⁹² "Flood Gives Renewed Clout to Powerful Pakistan Army," *Reuters*, September 6, 2010. The Army reports that it is providing more than half of all relief supplies, about three times the amount being provided by the rest of the government ("Pakistan Army Seeking Flood Relief Without Dependency on Aid, Mullen Told," *Bloomberg News*, September 2, 2010).

⁹³ "Altaf Asks 'Patriotic Generals' to Act," *News* (Karachi), August 23, 2010; Imtiaz Alam, "Altaf Hussain's Martial Law Balloon" (op-ed), *Daily Times* (Lahore), August 29, 2010; State Department's August 26, 2010, press briefing at <http://www.state.gov/r/pa/prs/dpb/2010/08/146322.htm>.

⁹⁴ "Army Won't Take Over: PM," *Daily Times* (Lahore), September 10, 2010.

spokesman for the Pakistani military asserted that their relief activities would “have no impact on our fight against militants.”⁹⁵

President Zardari has warned that “negative forces” could see a boost in recruitment as a result of the catastrophe. In a similar vein, Foreign Minister Qureshi expressed worries that, in the absence of sufficient government intervention, food rioting could lead to further violence “being exploited by people who are known.” Provincial officials have issued similar warnings.⁹⁶ Some observers believe such warnings are overblown and may reflect the desire of Pakistani officials to attract greater foreign assistance.

In recognition of the overwhelming nature of the flooding, U.S. officials apparently have refrained from pressing the Pakistani government and army to go ahead with anticipated military operations in the FATA—especially against the Afghan Taliban-aligned Haqqani network in North Waziristan—as they had been throughout 2010.⁹⁷ In August, the deputy commander of the Office of the U.S. Defense Representative in Pakistan expressed confidence that the Pakistanis will “continue to wage a dedicated, committed struggle against violent extremism.” More recently, the commander himself said the numbers of Pakistani troops dedicated to counterinsurgency operations was unchanged and the focus of the their leadership had “not wavered.” It is notable that the militants also have suffered setbacks: in the words of the senior-most U.S. military officer, “I think [the flooding] delays everybody’s timetable,” including “the enemy’s timetable.”⁹⁸

Despite these official U.S. and Pakistani expressions of confidence and determination, most independent observers contend that counterinsurgency efforts in the country now face major and obvious setbacks, not only due to the need to divert resources to relief efforts, but also because so much infrastructure has been damaged or destroyed.⁹⁹ Military gains made in the past 18 months are thus in jeopardy of being lost as a result of the flooding. In the Swat Valley of the KP province, which the Pakistani military had largely cleared of anti-government militants in 2009, electricity has been widely unavailable and most key roads, bridges, and other infrastructure are unusable.¹⁰⁰ Likewise, although TTP bases in South Waziristan recently were cleared through major military offensives, efforts to resettle hundreds of thousands of citizens displaced by the fighting there have been placed on hold.¹⁰¹ Beyond these Pashtun-majority northwestern regions

⁹⁵ “Pakistan Floods Could Give Taliban Time to Regroup,” *Associated Press*, August 11, 2010; spokesman quoted in “Pakistan Says Won’t Divert Forces From Militant Fight,” *Reuters*, August 13, 2010. Recent air strikes on Pakistani Taliban targets in the Tirah Valley of the Khyber Pakhtunkhwa province suggest that a level of pressure on insurgents is continuing (“Pakistan Raids Kill 45 Militants, Family Members,” *Reuters*, September 1, 2010).

⁹⁶ “Pakistan Leaders Says Militants Could Exploit Flood,” *Associated Press*, August 19, 2010; Qureshi quoted in “Pakistan’s Epic Flood” (editorial), *Wall Street Journal*, August 19, 2010; “Pakistan Says Militants Exploiting Flood Crisis,” *Los Angeles Times*, August 20, 2010.

⁹⁷ “Pakistan Fight Stalls for U.S.,” *Wall Street Journal*, August 13, 2010.

⁹⁸ Brig. Gen. Michael Nagata quoted in the August 25, 2010, Pentagon transcript at <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4677>; Vice Adm. Michael LeFever quoted in the September 9, 2010, U.S. Embassy transcript at <http://islamabad.usembassy.gov/pr-10090903.html>; Joint Chiefs Chairman Adm. Mike Mullen quoted in “Pakistan Army Seeking Flood Relief Without Dependency on Aid, Mullen Told,” *Bloomberg News*, September 2, 2010.

⁹⁹ See, for example, “Torrent of Challenges for U.S. in Pakistan” (interview), Council on Foreign Relations, August 20, 2010. Pakistan’s ambassador to the United States reportedly conceded that the military’s resources are stretched thin by the disaster, meaning its counterinsurgency operations are being hampered (“Flooding Hurts Pakistan Terror Fight,” *Associated Press*, September 8, 2010).

¹⁰⁰ “Flood Brings Chaos Back to Pakistan’s Swat Valley,” *New York Times*, August 19, 2010.

¹⁰¹ “For Pakistanis, The Worst May Be Still to Come,” *Washington Post*, August 18, 2010.

of the country, the flooding may also contribute to increased conflict and instability in the Pakistani heartland, where the LeT and other Sunni militant groups are based. Moreover, by creating a flow of hundreds of thousands of internally displaced persons into the southern megacity of Karachi, the floods have placed even more pressures where interethnic tensions were already high.¹⁰²

Some press reports have indicated that the main supply lines for U.S. and NATO forces in Afghanistan, which run from the Karachi port north to through Quetta or Islamabad, were significantly disrupted by the flooding. The inundation has forced trucks to take longer routes than usual, delaying schedules, but a spokesman for the U.S. military's Transportation Command said the slower delivery was not meaningfully affecting operations in Afghanistan. While the immediate effects on US/NATO operations are thus minor, Pentagon officials are concerned that secondary and tertiary effects impacting regional stability could be seen in the medium and longer-term.¹⁰³ The Afghan military has provided some resources to Pakistani flood relief, potentially improving Pakistan-Afghan relations.

Context of Pakistan's Flood Risk

Pakistan has experienced severe and dangerous flooding in the recent past.¹⁰⁴ One source indicates that serious flooding has affected what is now Pakistan at least 12 times since 1928.¹⁰⁵ This is the fifth flood in Pakistan affecting nearly 5 million or more people in less than 40 years.¹⁰⁶

Extreme precipitation is the immediate cause of flooding, and is part of weather extremes spawned during the dominant climate condition for Pakistan—the Asian monsoon system.¹⁰⁷ Rivers transporting floodwater from the north can pose flood risks to areas downstream. While extreme precipitation is the flood hazard, development patterns and infrastructure choices affect the number of people and structures and the infrastructure at risk. The relative frequency of significant flooding in Pakistan raises questions about if and how efforts to rebuild can improve the nation's resiliency to future extreme weather events and how international experience and aid can inform resilient rebuilding.

The current flooding in Pakistan is likely to prove the worst flooding disaster in the country's history, as far as the number of citizens affected, and the cumulative damage to the region's

¹⁰² Ethnic Pashtuns displaced by conflict in the FATA are now joined in large numbers by ethnic Sindhis from rural areas, posing a potential threat the established order of Karachi's dominant Urdu-speaking Mohajirs. Rioting and targeted killings are ongoing in Karachi; about 1,000 people have been killed in ethnic strife in Karachi in 2010 to date ("Crush of Refugees Inflames Karachi," *Wall Street Journal*, August 26, 2010).

¹⁰³ "Pakistan Flooding Disrupts Afghan War Supplies," *New York Times*, August 24, 2010; CRS interview with Defense Department official, August 24, 2010.

¹⁰⁴ The topography, proximity to oceans, and other factors all create significant variability in precipitation across the Pakistani territory during the wet monsoon season. Parts of Pakistan, such as the desert region of the south and southeast, experience little precipitation relative to the eastern and central plains of the country, which receive the full effect of the monsoon rains.

¹⁰⁵ "Unnatural Disasters," *Financial Times*, August 4, 2010. Statistics for the flood illustrate that this is Pakistan's largest disaster in terms of the number of people affected in the last 60 years: [http://www.reliefweb.int/rw/fullmaps_sa.nsf/luFullMap/8A7B7152D23697D0C125777B00411D87/\\$File/FL-2010-000141-PAK_0809_graph.pdf?OpenElement](http://www.reliefweb.int/rw/fullmaps_sa.nsf/luFullMap/8A7B7152D23697D0C125777B00411D87/$File/FL-2010-000141-PAK_0809_graph.pdf?OpenElement).

¹⁰⁶ Ibid.

¹⁰⁷ Defined by the National Weather Service as "a thermally driven wind arising from differential heating between a land mass and the adjacent ocean that reverses its direction seasonally." See <http://www.nws.noaa.gov/glossary/>.

economy. It is not yet clear to what extent the flooding itself, in terms of the flow, inundation duration, and land area affected exceeds previous flooding episodes, in part because of the paucity of instrumental data and lack of detailed analyses of recent past and paleo-flooding events in the region. Forthcoming studies are likely to shed light on whether the current flood fits within the historical range of extreme flooding events, or truly represents an outlier compared to the 1,000 year record of high rainfall events captured in tree-rings.¹⁰⁸

Climate Change and Flooding

A related issue is whether climate change during the last half-century contributed to the extent and severity of the current flooding. The 2007 Intergovernmental Panel on Climate Change (IPCC) report stated that scientists project more frequent and more intense weather events due to global warming.¹⁰⁹ However, the report and other scientists contend that a longer time range is needed to attribute single weather events, such as the 2010 floods in Pakistan, to global warming. The IPCC report also stated that an increase in precipitation is projected in the Asian monsoon associated with man-made global warming. The report points out, however, that the role of aerosols in general, and carbon aerosols in particular, complicates the nature of monsoon precipitation, especially Asian monsoon.¹¹⁰ Detecting a global-warming induced fingerprint in the current flooding may prove elusive until more detailed and focused scientific studies of the nature of the current flooding are completed. Even if global warming were identified as a contributing factor to the severity of the current flooding, it may not be possible to equate the global warming “signal” to an increase in deaths, injuries, and economic losses because changes in population demographics, infrastructure, and other factors also contribute to vulnerability to weather extremes. Disentangling climate change effects from demographic factors contributing to economic losses has been notoriously difficult for natural disasters such as floods and tropical cyclones in the United States.¹¹¹ Therefore, although the monsoon’s floodwaters appear broadly consistent with predicted climate change impacts for the region, it is currently not possible to attribute direct causality.

Observations

The flooding in Pakistan is expected to have significant short-term and potential long-term effects on the country. These effects will be exacerbated by existing problems in Pakistan that range from poverty and depleted infrastructure, among other things. The short-term effects of flooding are steadily being realized as displaced people start returning to their homes in northern areas where floodwaters have receded, and government officials and aid workers begin reporting issues from

¹⁰⁸ New scientific research is emerging that provides detailed information on the location, duration, and severity of drought and rainfall events in the region affected by the Asian monsoon, which includes India and Pakistan. In a recent study, tree ring records were examined to reconstruct dry and wet periods over the past 1,000 years for regions of monsoon Asia. Edward R. Cook et al., “Asian Monsoon Failure and Megadrought During the Last Millennium,” *Science*, vol. 328 (April 23, 2010), pp. 486-489. Although the study focused on periods of drought (triggered when the monsoon “failed”), it noted that “Monsoon failures, megadroughts, and extreme flooding events have repeatedly affected the agrarian peoples of Asia over the past millennium.”

¹⁰⁹ IPCC, “Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change,” Chapter 10, Global Climate Predictions, 2007.

¹¹⁰ Ibid, Executive Summary.

¹¹¹ See, for example, Roger A. Pielke, Jr. and Mary Downton, “Precipitation and Damaging Floods: Trends in the United States, 1932-97,” *Bulletin of the American Meteorological Society*, October 15, 2000, pp. 3625-3637; and Roger Pielke, Jr., “Future Economic Damage from Tropical Cyclones: Sensitivities to Societal and Climate Changes,” *Philosophical Transactions of the Royal Society A*, 2007 (published online, doi: 10.1098/rsta.2007.2086).

all affected areas. The full extent of the long-term effects of the flooding are likely to present daunting challenges to the country. The long-term effects are likely to manifest themselves in two ways that have significance to the United States and Congress. One aspect is the humanitarian toll that is likely to emerge from displaced people, disease, food security, and an economic decline. Another aspect is the strategic concerns that could result from a weakened government, and a dissatisfied and disenfranchised population. The strategic implications involve U.S. interests in countering Islamic militancy in the region, strengthening democracy in Pakistan, and fighting the war in Afghanistan.

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